Sparkfun ADXL345 I²C Interface to the Minnowboard Max/Turbot/Dual Ethernet

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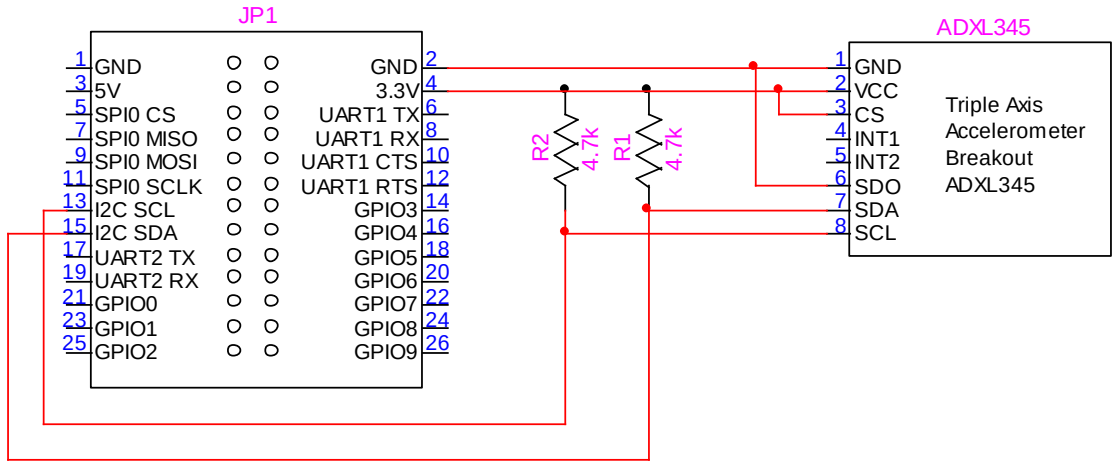
Annabooks – www.annabooks.com

January 2018

The Accelerometer sample application on the Windows 10 IoT Core site supports the SparkFun ADXL345 breakout board connected through the SPI or I²C interface. The readme only shows how to wire the ADXL345 breakout board to the SPI port of the Minnowboard Max/Turbot/Dual Ethernet. This paper will cover how to connect the ADXL345 breakout board to the I²C port. With /CS tied high, the ADXL345 will operate in I²C mode. The data and clock lines, SDA and SCL, require pull-up resistors for proper operation. The pull-up resistor values are those recommended by SparkFun. The value of the pull-up will vary depending on the power supply voltage, the capacitance of the bus, and the clock speed that you are intending to use. Refer to this I²C pull-up discussion and the TI *"I2C Bus Pullup Resistor Calculation" Application Report*. The following table lists the pin connections:

SparkFun ADXL345	Minnowboard Max/Turbot/Dual Ethernet
GND	GND Pin 2 or Pin 1
Vcc	3.3V Pin 4
CS	3.3V Pin 4
INT1	No Connect
INT2	No Connect
SDO	GND Pin 2 or Pin 1 (Alternate Address Pin)
SDA	I2C SDA Pin 15 (4.7kΩ Pull Up Resistor)
SCL	I2C SCL Pin 13 (4.7kΩ Pull Up Resistor)

Here is the schematic:



Note that with the SDO pin tied low, as shown above, the address of the device will be 0x53 (followed by the R/W bit). If the SDO pin were tied high, the address of the device would be 0x1D (followed by the R/W bit).

Note that the connection numbers are the solder pads on the SparkFun circuit board and not the pin numbers of the ADXL345 chip, itself.

Compare the above circuit with the SPI circuit on the application page, and the SPI connection is simpler. There are two Accelerometer solutions that come from the IoT Core sample applications on GitHub: SPIAccelerometer and I2CAccelerometer. The SPIAccelerometer supports both SPI and I2C, but you can only select one. In the code, set private Protocol HW_PROTOCOL = Protocol.I2C.